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OPINION AND ORDER OF THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF PENNSYLVANIA

Civil Action Nos. 30984, 34333, 34334, 34483

April 28, 1969

FULLAM, J.

This is a consolidated action for infringement of United States letters of patent number 2,620,938 (hereinafter '938). Defendants seek a declaration of invalidity and non-infringement. Pursuant to Rule 42(b) of Fed. R. Civ.P., the issues of liability for infringement and damages have been separated. Upon review of the trial record, and consideration of the proposed findings of fact and conclusions of law, the Court makes the following:

FINDINGS OF FACT

1. The '938 patent was originally issued to Mr. Charles Jesnig on December 9, 1952. Mr. Jesnig died before trial. Plaintiff Package Devices, Inc. (hereinafter PDI), is now the rightful owner of '938.

2. Plaintiff, PDI is a Pennsylvania corporation, having its principal office in Philadelphia, Pennsylvania.

3. Defendant, Sun Ray Drug Co. is a Pennsylvania corporation, having its principal place of business in Philadelphia, Pennsylvania.

4. Defendant, Owens-Illinois Glass Co. is an Ohio corporation, having a regular and established place of business at Philadelphia, Pennsylvania.

3. Defendant Wyeth Laboratories Division, American Home Products Corp. is a Delaware corporation, having a regular and established place of business in Wynnewood Pennsylvania.

6. Defendant E. J. Kenvette is a New York corporation, having a regular and established place of business at Philadelphia, Pennsylvania.

7. Owens-Illinois Glass Company (hereinafter Owens-Illinois) is a manufacturer of the accused structures, and Sun Ray Drug Co., Wyeth Laboratories, and E. J. Kenvette Inc. have marketed products in these structures.

8. The subject matter of the '938 patent is the design of a container finish, particularly the neck ring, and the design of an elastomer container cap. Products such as aspirin are marketed in containers with the so-called snap tops which are alleged to infringe '938.

9. The inventor, Mr. Jesnig, conceived his invention in January of 1947, while engaged in research to develop methods of vacuumizing tin can containers. He made a polyethylene cap to fit over a model with a 30°/30° conical finish on February 4, 1947.

10. At some time before May 12, 1948, Mr. Jesnig was requested by Mr. Nack, an employee of Sharpe & Dohme, Inc., to endeavor to develop a suitable closure for serum vials which the Wheaton Glass Co. was currently manufacturing and supplying to Sharpe & Dohme, Inc.

11. Subsequent to the meeting with Mr. Nack, but prior to May 12, 1948, Mr. Jesnig prepared a lucite model of a closure and a neck finish which reflected the concepts incorporated in the tin-can experiment of February 4, 1947, and which was essentially the same as the '938 patent.

12. Mr. Wheaton, of the Wheaton Glass Co. (hereinafter Wheaton), found Jesnig's model acceptable, but for expediency decided to use the closure with a standard rounded finish that was presently available.

13. After the meeting with Mr. Wheaton, Mr. Jesnig began the process of preparing a patent application con-

cerning the use of his closure with the standard rounded finish which Mr. Wheaton had decided to use. The application was filed on May 12, 1948, and United States Letters of Patent No. 2,587,327 (hereinafter '327) was issued on February 26, 1952.

14. After his original decision to use a standard rounded finish, Wheaton developed a glass finish with a 30°/30° conical surface. This new finish was designed to imitate the finish of the original model which Jenning had shown to Mr. Wheaton, and production drawings were in existence on October 22, 1948. Production of bottles with the new finish was underway by February 1949.

15. On January 24, 1949, PDI, the assignee from Jenning of patent application No. 26687 (this application matured into the '327 patent) entered into a licensing agreement with Wheaton. The subject of this agreement was the closure or the snap-cap that was to be used with the standard rounded finish.

16. Bristol Myers, a vendee of Wheaton, forwarded Wheaton's production drawings of the 30°/30° conical neck ring to Owens-Illinois some time just prior to July 5, 1949. Owens-Illinois manufactured bottles in accord with the Wheaton drawing in December of 1949.

17. The prosecution of the '938 patent was initiated on September 12, 1949, and the patent was issued on December 9, 1952. Ten claims were contained in the original application. Shortly thereafter, November 22, 1949, Claims 11 and 13 were added. These were designed to elucidate the importance of the neck ring and the interaction of the neck ring and cap. All thirteen claims were rejected by the Examiner on January 27, 1950, on the basis of prior art. The term "apex" was used in Claims 11 and 12 to describe the juncture of the outward and inward tapers of the container ring. No definition of apex was contained in these claims; however, the application described the apex as a "peak or line."

18. In response to the Examiner's action of January 27, 1950, amendments were made by a letter dated May

31, 1950. These amended Claims, 1 through 13, were again rejected on the basis of prior art.

19. By letter dated May 9, 1951, all thirteen claims were cancelled and Claims 14 through 18 were added. On July 3, 1951, Claims 19 through 25 were added and Claims 14 through 18 were cancelled without any action being taken by the Examiner. The term "apex" was again used to describe the juncture point. The Examiner rejected Claims 19 through 25 on July 31, 1951. His basis, again, was prior art.

20. On January 25, 1952, plaintiff cancelled his prior claims and added Claims 26 through 28. An affidavit by Dr. Mauchly accompanied these amendments. The language "steep annular apex" was used in these claims. In the statement supporting these amendments, Mr. Jesnig described the neck ring as "two flats coming up to a steep apex or knife edge which acts as a fulcrum up to a steep apex or knife edge which acts as a fulcrum. . . ." (D.E. 71 p. 58) On February 21, 1952, Claims 26 and 28 were rejected on the basis of prior art, but 27 was allowed if the term "steep" was eliminated. The Examiner observed: "The word 'steep' in [the three claims] is objected to as being meaningless and indefinite as used in these claims." (D.E. 71 p. 82)

21. On February 21, 1952, Mr. Jesnig, apparently unaware of the Examiner's action of that date, cancelled all previous claims and substituted Claims 29 through 31. In these he used the language "annular peak line" to refer to the juncture of the inward and outward tapers. In the accompanying statement, Mr. Jesnig emphasized the importance of the design of the neck ring:

> "The neck ring should make a rapid transition from one of these conical surfaces to the other and at an apex which is essentially a circular edge . . . The object here is to minimize the possible position in which the cap could remain in a state of neutral equilibrium instead of either sealing properly or coming back off." (D.E. 71 p. 89)

22. On August 19, 1952, after Jesnig became aware of the Examiner's action of February 21, 1952, all prior claims were cancelled and Claims 32 through 34 were added. The claim at issue in the present litigation was denominated as Claim 33 of these amendments. Claim 33 was formerly Claim 29 and Claim 29 was formerly 26. Claim 26 was originally rejected by the Examiner's action of February 21, 1951, on the basis of prior art. The term "steep" was deleted in accord with the Examiner's observation that the term was "meaningless and indefinite." A notice of allowance was then issued on September 19, 1952.

23. Claim 2 of '938, which is at issue in this action, reads as follows:

In a container,

A a vessel having a rigid neck provided with a neck opening and

B having an external annular neck ring on the neck

C which has a conical annular surface tapering abruptly outwardly from the end of the neck ring adjoining the neck opening and

D a reverse conical annular surface tapering abruptly inwardly on the side of the neck ring remote from the neck opening,

E the conical annular surfaces meeting in an annular apex which has the largest diameter of the cap area of the neck ring,

F and a resilient elastomer cap body

G having an end portion which extends over, closes and seals against the otherwise open end of the neck and

H having a continuous annular flange portion integral with the end portion,

I the flange portion having a larger diameter than the conical annular surface of the neck ring, and

J the flange portion having an inwardly extend-

ing and downwardly converging continuous annular rim which engages around and grips the reverse conical annular surface of the neck ring when the cap is in place on the neck ring.

K the inner annular rim surface conforming with the reverse conical surface for sealing engagement therebetween.

L the rim being so spaced relative to the cap end portion that when the cap is in place on the neck ring, the cap engages the neck ring at the end of the neck adjoining the neck opening and on the reverse conical surface.

M the aforesaid structure of the neck ring cooperating with the axial resilience of the cap flange to store energy during the first stages of cap application, which energy is released suddenly as the rim attains the apex so as to cause the rim to pass completely over the apex and the cap attains its final sealing position and to maintain said flange portion under substantial axial tension in said cap position.

24. During the prosecution of this application, seventeen patents were cited as prior art by the Examiner.

25. Of those cited by the Examiner, defendants now rely on the Stewart, Jesnig '327, and the British patents.

26. The Stewart patent, Patent No. 2,109,805, was issued on March 1, 1938. The subject matter of the patent is a metal pry-off closure to be applied to a glass bottle. Locking of the metal cap is effectuated by circumferentially spaced inwardly projecting lugs. The neck ring is a circumferentially continuous bead which has a downward and outward slope of 45°, a radius of 1/32 of an inch, and a downward and inward slope of 30°. The upper surface of the bead is considerably longer than the lower surface. After the lugs have traversed the upper surface of the bead and the radius, the lugs engage the lower surface of the bead. A gasket is used in order to create a seal at the mouth of the bottle.

27. British Patent No. 484,161 was issued on April 29, 1938. A conical neck finish is used on the bottle, and the juncture of the upper and lower surfaces is specified to be as sharp as possible. A metal cap with packing in the cap skirt is designed to fit onto the upper and lower surfaces of the neck finish. Another gasket is used in the top of the closure to form a seal between the cap and the mouth of the bottle.

28. The Jesnig patent, No. 2,587,327, was issued on February 26, 1952. The subject matter of the patent is a resilient plastic cap to be utilized with a standard rounded finish. The skirt of the cap has a circumferential annular bead which is applied over the finish, and depending upon design, either engages the lower surface of the rounded finish or the wall of the container itself. The skirt of the cap has a cut-out groove that separates the bead portion of the skirt from the outside portion of the skirt. This allows the bead portion of the skirt to expand while the outside portion is stable. Engagement is made between the cap and the mouth of the bottle. By using this design a snapping action was created when the cap was applied to the bottle.

29. Defendants also cite the Dunfee, Goebel, and Randlett patents. These were not cited by the Examiner.

30. The Dunfee patent, Patent No. 1,175,054, was issued on March 14, 1916. The inventor's purpose was to design a one-piece nipple and closure that could be more securely attached to a nursing bottle. A neck ring with an outwardly-faced "V" shaped conical surface interacts with a "V" shaped internal bead on the skirt of the rubber cap. There is contact between the cap bead and the lower conical surface of the neck ring and with the container wall below the lower conical surface.

31. The Goebel patent, Patent No. 2,063,428, issued on December 8, 1936, concerns a reusable metal cap which can be manually snapped on and off a glass container. The neck ring of the finish originates below the

mouth of the container, and the circumferential bead has an upper surface moving downwardly and outwardly to a radial juncture, and a lower surface moving downwardly and inwardly at a greater angle than the upper surface. The inwardly-facing corrugated skirt of the cap has a slightly smaller diameter than the maximum diameter of the neck finish, in order to insure the engagement of this skirt and the lower conical surface of the neck ring. By using a resilient corrugated skirt with a narrower diameter than the bottle finish, a camming effect is created, and as the cap passes to the lower conical surface a tensioning effect is created; said effect is enhanced by the abrupt angle of the lower surface. An upper seal is effectuated by the use of a gasket in the cap.

32. The Randlett patent, Patent No. 2,576,416, was applied for on June 8, 1948, and issued on November 27, 1951. This invention involves a removable rubber-like snap-cap with a perforated top for dispensing seasonings. A glass container is fitted with the removable dispensing cap, and a standard threaded closure is applied over this dispensing cap. There is a slight radius at the mouth of the container, and just below this point there is an inwardly-faced "V" shaped groove. The dispensing cap has a skirt with a "V" shaped bead which is received into the container's "V" shaped groove when the cap is applied. Engagement is made between the cap bead and the container groove on the downward and inward surface of the groove.

33. Defendants also cite the Lumelite Cap, an article entitled "Precocious Plastics" in the February 1948 issue of *Modern Plastics*, the combination of the Lumelite Cap and British Patent No. 484,161, the Kitchen Kap and Flexeal Finish, and the Barnby patent application, No. 759,049, filed on July 5, 1947.

34. By December of 1945, the Lumelite Corp. of Pawling, N.Y. was marketing a reusable polyethylene cap [the Lumelite Cap] to be applied to bottles having a

standard crown finish. The diameter of the cap was designed to be smaller than the maximum diameter of the crown finish. After the cap was stretched over the crown finish, the internal circumferential bead of the cap engaged the downward and inward surface of the crown finish. A primary seal was formed between the cap and the bottle mouth, and a secondary seal was formed between the bead of the cap and the lower surface of the crown finish. Small orders for the Lumelite Caps were received as early as December 14, 1945, and sales increased thereafter. One of the main selling features of the cap was the noise of the cap bead snapping over the finish of the bottle.

35. The February 1949 issue of *Modern Plastics* contained an article entitled "Precocious Plastics." This article predicted that one of the largest uses of polyethylene would be in the container closure field, and that Lumelite Corp. was currently marketing a wide variety of polyethylene closures, including the Lumelite Cap.

36. Defendants have also cited a hypothetical combination of the Lumelite Cap and the finish of the British Patent No. 484,161. If the cap and the container finish were dimensionally coordinated, the bead of the Lumelite Cap would move down the upper surface of the neck ring, cross the sharp juncture point of the upper and lower surfaces, and then engage the lower conical surface.

37. By January 1, 1946, Owens-Illinois manufactured and sold a glass container with a Flexeal finish. Customers of Owens-Illinois marketed coffee in these containers. Drawings for a reusable polyethylene cap designed to be used with the Flexeal finish were in existence on April 10, 1947, and said polyethylene caps were manufactured and sold under the trade name Kitchen Kaps by July 1, 1947. Coffee retailers marketed coffee in Flexeal containers with a metal closure, and after the purchaser removed the metal closure the Kitchen Kap was used as its replacement. The skirt of the Kitchen

Kap has a circumferential bead at its lower portion, and the Flexeal finish has a top sealing bead at the mouth and below that a non-continuous annular neck ring. The bead of the Kitchen Kap moves down the 4° angle of the upper surface of the neck ring to the point of maximum diameter, then the bead moves inward on the lower surface of the neck ring, which has a substantially more acute angle than the upper surface. Engagement is made between the cap and the container at the mouth of the container and between the bead of the cap and the lower surface of the neck ring.

38. On July 5, 1947, Herbert Barnby, an employee of Owens-Illinois, filed patent application No. 759,091. This application describes a closure similar to the Kitchen Kap, and the bottle finish of the container was similar to that of Flexeal finish. By June 30, 1949, Barnby claimed that when the cap was applied to the glass finish a hermetic seal would result at the point of engagement of the cap and the mouth of the container, and at the point of engagement of the cap bead and the lower surface of the nick ring.

39. Owens-Illinois was aware of the '938 patent as early as 1954. Subsequently, employees of Owens-Illinois manifested their awareness of the possibility that their products might be alleged to infringe '938.

40. Owens-Illinois accused structures, bottle finishes 1061-C, 1056, and 1058, all have a radius of 1/64 to 1/32 of an inch at the juncture of the upper and lower surfaces of the neck ring.

41. There was a need for improved closures in the pharmaceutical industry in 1948.

42. On August 5, 1954, PDI issued a license to use '938 to Wheaton and agreed to a voluntary dismissal of its pending infringement suit. As consideration, Wheaton agreed to pay $10,000. In addition, Wheaton agreed to pay a 5% royalty on all sales after any final judgment adjudicating '938 valid.

43. On February 10, 1956, PDI granted a license to the West Company of Phoenixville, Pennsylvania, to use the '327 and '938 patents. As consideration, a 5% royalty on all sales was to be paid.

44. On January 25, 1962, PDI granted a license to Armstrong Cork to use '938. PDI also released Armstrong and its customers from any infringement claims which it had against said parties. Twenty thousand dollars was paid as consideration.

45. On August 17, 1962, PDI granted a license to Diamond Glass Co. of Pennsylvania to use '938. PDI also released Diamond and its customers from any infringement claims which it might have against said parties. Seventy-five hundred dollars was paid as consideration.

46. On October 30, 1962, PDI granted a license to Anchor Hocking Glass Corp. to use '938. PDI also released Anchor Hocking and its customers from any infringement claims which it might have against said parties. Fifteen hundred dollars was paid as consideration.

47. On October 30, 1962, PDI granted licenses to Dougherty Brothers Co. to use '327 and '938. A 5% royalty on net proceeds of sales of snap-caps was the agreed consideration.

48. On September 11, 1963, PDI granted licenses to Continental Can Co., Inc. to use '327 and '938. PDI also released Continental and its customers from any infringement claims which it might have against said parties. PDI and Continental also agreed to cooperate in causing a voluntary dismissal of PDI's infringement suit against Continental. Fifteen thousand dollars was paid as consideration.

49. On May 5, 1966, PDI granted a license to Rexpax, a division of Rexall Drug and Chemical Co., to use '938. As consideration, Rexpax agreed to a 5% royalty if gross sales were less than five million units, and 3% if gross sales were over five million units, with a minimum guarantee of $1,000 per year. Rexpax had a unilateral right to cancel on a 30 day notice.

DISCUSSION

The patent claim at issue relates to the design of a container and a cap, and the dimensional interrelationship of these two independent structures. This litigation has been primarily focussed upon the design of the neck ring of the container. In general terms, a cross-section of a neck ring reveals that the ring is comprised of two surfaces, an upper and a lower. The upper surface may be conical or semi-circular in design and it moves from the mouth of the container outwardly and downwardly; conversely, the lower surface moves from the outermost end of the upper surface inwardly and downwardly to the neck wall of the container. An important facet of this action is the design of the juncture point of these two surfaces. Two possibilities exist: the juncture point may be a radial surface, or merely a straight line juncture similar to the point at which two sides of a triangle meet.

It is the defendants' position that the plaintiff's patent is invalid because it fails to meet the requirements of sections 102(a), (b), 103 and 112 of the Patent Act, 35 U.S.C. §§102(a), (b), 103, 112. Each of the defendants' defenses will be considered separately.

Section 112

Section 112[1] reflects a congressional attempt to accommodate the sometimes conflicting policies of the

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[1] "*Specification*

"The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

"The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. . . ."

patent law: "[T]o protect the patentee and encourage experimentation in the area not covered by the patent." *Corning Glass Works v. Anchor Hocking Glass Corp.*, 374 F. 2d 473, 477 (3d Cir. 1967). Mr. Justice Reed articulated the purposes of section 112 in *General Electric Corp. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1937):

> "The limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent be dedicated ultimately to the public. . . . The inventor must inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not.'"

The Court reaffirmed the public-interest aspect of section 112 in *Union Carbide Company v. Binny & Smith Co.*, 317 U.S. 228, 236 (1942):

> "A zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field."

Defendants contend that the term "apex", as used in sub-parts E and M of Claim 2, does not provide sufficient guidance to one skilled in the art to determine the precise strictures of the patent. Apex is defined in Webster's International Dictionary as: "The highest or uppermost point: as (1): the vertex of an angle, a cone, or a pyramid . . ." In the context of this case, the indefiniteness allegedly flows from the fact that "apex" could be interpreted to mean a sharp-line juncture of the upper and lower conical surfaces of the container or bottle finish, or could also include a radial juncture. A second source of difficulty is determining the precise magnitude of the radial juncture that would be wtihin the meaning of the term "apex."

In the light of these contentions, the first task of this Court is to determine the precise meaning, if any, of the term "apex" as used in the patent. There is nothing in the patent that would lead one to conclude that apex means a radial surface. On the contrary, common sense would indicate that the meeting point of two conical surfaces would be a point similar to the meeting point of two sides of a triangle, i.e., that in fact there was not a radial or curved surface between the two outermost points of the upper and lower conical surfaces.

Moreover, the Supreme Court in *Calmar, Inc. v. Cook Chem. Co.*, 383 U.S. 1, 33 (1965) indicated that the file-wrapper history of a patent should be considered in determining the proper construction of a patent. It is clear from the file-wrapper that Mr. Jesnig interpreted apex to mean a non-radial juncture. He characterized apex to mean a "peak or line," "knife edge," and "circular edge." It should be pointed out that these terms are not in the various claims that were filed during the period of prosecution, but are statements made before the Examiner. However, it would seem, and it has been long approved in this Circuit, that the inventor's statements are properly considered in interpreting the language of a patent claim. *Westinghouse Elec. Co. v. Hanover Chem. & Manu. Co.*, 179 F. 2d 293 (3rd Cir. 1949).

In sum, it is my opinion that the term apex as used in the claim is sufficiently definite to allow those skilled in the art to determine the scope of the patent. Common sense, and the inventor's own statements indicate that apex means a sharp-line juncture point of the upper and lower surfaces of the neck ring.

Section 102

Subsections (a) and (b) of section 102[2] spell out

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[2] *"Conditions for patentability; novelty and loss of right to patent*

the statutory standard of novelty. The critical date for the application of subsection (a) is the date of invention, and since I have found as a fact that Jesnig's date of invention was February 7, 1947, this is the reference point for section 102(a).

Ordinarily, the application date of the patent is the controlling point of reference under section 102(b). However, the defendants claim that the addition of elements E and M in the August 19, 1952 amendments constituted new matter under section 132. If this were the case, then August 19, 1952 would be the reference date under section 102(b). *See* 37 C.F.R. §1.118 (1967); *Muncie Gearworks, Inc. v. Outboard Marine & Manu. Co.*, 305 U.S. 759 (1942).

It is significant that the Patent Office made no objection to the amendments of August 1952. In view of this fact, this Court in making its own determination of this issue must give weight to the expert judgment of the Patent Office. *Technicon Instruments Corp. v. Coleman Instruments Corp.*, 385 F. 2d 391 (7th Cir. 1967); *Aerosol Research Co. v. Scovill Manu. Co.*, 334 F. 2d 751 (7th Cir. 1964). There was, however, a divergence of opinion in the expert testimony as to whether or not element M of '938 was new matter. I am persuaded that element M was not new matter, but rather was a description of the physical phenomenon that supposedly occurred when the cap was applied to the container. Since this explanation in no way changed the design or construction of the patented device, it could not be new matter. *See Technicon Instruments Corp. v. Coleman Instruments Corp.*, *supra*; *Aerosol Research Co. v. Scovill Manu. Co.*, *supra*; *Chemi-*

"A person shall be entitled to a patent unless—

"(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

"(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or . . ."

cal Const. Corp. v. Jones & Laughlin Steel Corp., 197 F. Supp. 644 (W.D.Pa. 1961), *aff'd*, 311 F. 2d 367 (3rd Cir. 1962). Therefore, the reference date for section 102 (b) is one year earlier than the application, September 2, 1948.

In order for the '938 patent to be invalidated under section 102(a) and (b), one prior art reference must show "all of the same elements . . . in exactly the same situation and united in the same way to perform the identical function." *Walker v. General Motors Corp.*, 362 F. 2d 56, 58 (9th Cir. 1966); *accord, Ceramic Tilers Supply, Inc. v. Title Council of America, Inc.*, 378 F. 2d 283 (9th Cir. 1967).

The defendants rely mainly on the Lumelite cap in combination with a crown finish, and the Kitchen Kap. However, neither of these products reads on the '938 patent in a sufficiently identical manner to invalidate the '938 patent. Also none of the other references that were extant during the appropriate time periods under section 102 (a) and (b) meets the stringent standard of identity required by section 102.

Section 103

As is typical in patent litigation, the defendants have strongly argued that the '938 patent is *obvious* within the meaning of section 103 of the Patent Act.[3] 35 U.S.C. §103. After section 103 was added in 1952, a controversy developed over the effect of the section on the standards of invention. However, the Supreme Court put this issue

[3] "*Conditions for patentability; non-obvious subject matter*

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

to rest in the *John Deere* trilogy.[4] Mr. Justice Clark, writing for the majority in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), stated:

> "We believe that this legislative history, as well as other sources, showed that the revision was not intended by Congress to change the general level of patentable invention. We conclude that the section was intended merely as a codification of judicial precedents embracing the *Hotchkiss* condition, with congressional directions that inquiries into obviousness of the subject matter sought to be patented are prerequisite to patentability."

The Supreme Court also indicated the factual analysis that a district court must make preparatory to applying the section 103 standard:

> "Under §103, the scope and content of the prior art are to be determined; diferences between the prior art and the claims at issue are to be ascertained; the level of ordinary skill and the pertinent art resolved. Against this background, the obviousness or unobviousness of the subject matter is determined." *Id.* at 17.

Since I have already determined the content of the prior art in my findings of fact, the primary point to consider is the difference between the prior art and the '938 patent.

Although seventeen patents were cited as prior art by the Examiner, the defendants have relied primarily on Stewart No. 2,109,805, and the British patent, No. 484,161. Jesnig No. 2,587,307, which was cited in the text of the patent by the inventor is also relied on by the defendants. Each patent discloses a different design of its neck

[4] *Graham v. John Deere Co.; Calmar, Inc. v. Cook Chem. Co.; Colgate-Palmolive Co. v. Cook Chem. Co.*, 383 U.S. 1 (1966); *United States v. Adams*, 383 U.S. 39 (1966). *See generally*, Kitch, *John Deere Co.: New Standards for Patents*, in The Supreme Court Review (Kurland ed. 1966).

ring. Stewart has an upper and lower conical surface with a radial juncture point. Jesnig '327 utilizes a standard finish which is semi-circular and the British patent specifies a "V" shaped neck ring which is to be made as sharp as possible. Both Stewart and the British patent use metal caps, whereas, the Jesnig '327 uses a polyethylene cap similar to that in the '938 patent.

Notwithstanding the marked similarity of the neck rings of Stewart and the British patents to the design of the '938 neck ring, and the substantial identity of the Jesnig '327 cap to the '938 cap, the Examiner granted the patent. The allowance of a patent claim gives rise to a presumption of validity under section 282 of the Patent Act.[5] 35 U.S.C. §282. The Third Circuit has recently indicated the effect of this presumption in *Schmidinger v. Welsh*, 383 F. 2d 455, 462, n. 10 (3rd Cir. 1967):

> "[T]he burden of proving invalidity in face of the presumption is a heavy one, but the presumption is by no means conclusive."

Moreover, the Supreme Court in the *John Deere* case observed that there is "a notorious difference between the standards applied by the Patent Office and by the courts." 383 U.S. at 18.

With the nature of the presumption in mind the next step is to analyze the references which were cited by the defendants in this litigation, but not cited by the Examiner. If these disclose relevant elements not before the Examiner, then the statutory presumption of section 282 is commensurately weakened. *Chemical Const. Corp. v. Jones & Laughlin Steel Corp.*, 311 F.2d 367 (3rd Cir. 1962); *Scripto Ink v. Ferber Corp.*, 267 F.2d 308 (3rd Cir.), *cert. denied*, 361 U.S. 861 (1959). On the other hand if there are no new elements in the defendants' references,

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[5] "*Presumption of validity; defenses*

"A patent shall be presumed valid. The burden of establishing invalidity of a patent shall rest on a party asserting it. . . ."

then the presumption remains in effect, and this Court would be guided by the dictates of *Schmidinger*.

Goebel differs from '938 in that the neck ring originates below the mouth of the container. However, the design of the neck ring in Stewart and Goebel are the same, *i.e.*, an upper and lower conical surface with a radial juncture point. Also Goebel uses a metal cap somewhat akin to Stewart, but different from the elastomer cap of '938. However, the diameter of the metal cap at its narrowest point is slightly smaller than the diameter of the neck ring, and this is similar to the diameter of the '938 cap as it relates to the '938 finish. Goebel also indicates that the angles of the conical surfaces were deliberately designed to be abrupt, in order to enhance the locking effect as the cap engages the lower surface of the neck ring. The plaintiff's expert, Dr. Mauchly, testified that the abruptness of the angles was a significant aspect of '938.

Dunfee relates to a one-piece nipple and cap. The neck ring is "V" shaped, and, therefore, similar to the British patent cited by the Examiner. Engagement between the rubber cap is made on the lower conical surface and the container wall. In '938, no engagement is made on the wall, and the purpose of '938 was to have a snapoff cap, whereas, Dunfee endeavored to have the cap firmly secured to the bottle. However there is no indication that an adult could not remove the cap easily.

The plaintiff has challenged the propriety of considering Randlett as prior art. It will not be necessary to decide this point, since any relevant elements which Randlett discloses are also in proper prior art.

Defendants also cite the article "Precocious Plastics." This article predicted the advantageous use of polyethylene in the closure industry. It also pointed out that the Lumelite Corp. was presently marketing a polyethylene closure to be applied to soft-drink bottles having a standard crown finish. The defendants also cite the combination of a Lumelite cap and the British neck ring fin-

ish. There is a significant similarity between this combination and '038. However, the Examiner had the Lumelite cap and crown finish and the Lumelite cap and British finish before him, to the extent that Jesnig '327 and Sampson, No. 1,430,685, disclosed the use of plastic caps, Jesnig '327 disclosed the crown finish, and the British patent the "V" shaped finish.

Great reliance has been placed on the so-called Kitchen Kap and Flexeal finish manufactured by Owens-Illinois. The design of the polyethylene Kitchen Kap is somewhat similar to Jesnig '327 and '038. The upper surface of the Flexeal neck ring is different to the extent that its angle with the vertical is only 4°. This is in contrast to the abrupt angle of '038. It is the plaintiff's contention that this difference is critical in that the Flexeal finish will not expand the cap sufficiently to get the important tensioning effect. However, the Flexeal finish does have the abrupt angle on the bottom which is considered to be significant in '038.

Over the objection of plaintiff's counsel, the abandoned Barnby application, No. 759,019, was conditionally admitted into evidence. The defendants in their post trial brief have argued that the Barnby application represents an attempt by Owens-Illinois to obtain a patent on the Kitchen Kap. However, there is no testimony in the record to substantiate this position. Therefore, the Kitchen Kap cannot be equated to the cap and closure disclosed in the Barnby application.

Moreover, the plaintiff correctly argues that an abandoned patent application cannot be cited as a prior art reference. *White Cap Co. v. Owens-Illinois Glass Co.*, 203 F. 2d 694 (6th Cir. 1953). However, the Barnby application is relevant, since it is an indication of the state of art in the cap and closure field as of July 1947.

The Barnby application discloses the use of a polyethylene cap with an internal holding bead in the skirt, and the design of the neck ring is similar to the Owens-

Illinois Flexeal finish. Engagement is made between the cap bead and the lower surface of the neck ring; such engagement creates a "downward tension to the cap by which the latter is held in sealing contact with said top surface of the jar." One of Barnby's purposes was to create an air and vapor-tight seal without the use of gasket material between the top of the cap and the bottle mouth.

Barnby indicates that as early as July 1947, those skilled in the art were cognizant of benefits that could be realized by the use of polyethylene as the material for the manufacture of container caps. In addition, the use of a neck ring and an internal bead on the cap skirt were recognized as an advantageous means of utilizing the physical characteristics of polyethylene.

Plaintiff's case in chief consisted of only one witness, Dr. John W. Mauchly, a fully-qualified engineer. Dr. Mauchly was also the author of a lengthy affidavit that was submitted to the Patent Office in support of the patentability of the '938 patent. I will discuss his testimony at length, since it will be helpful in arriving at an understanding of the operation of the '938 device.

Initially, it should be pointed out that Dr. Mauchly testified to the effect that the specific design of the cap bead was not of great import. It was his position that the design of the neck ring was the essence of the inventive quality of '938.

Dr. Mauchly also indicated that the snapping sound which occurs when the '938 cap is applied to the container was not in itself of any significance, but rather, the snapping effect is a commercially advantageous by-product of the design of '938. He did stress two other effects of the design as being important; the sealing both at the mouth of the bottle and on the lower conical surface, and the fact that it was more difficult for the '938 cap to be improperly applied than caps and containers of different designs. Apparently, it is the double-sealing effect and the quality of

these seals, that constitutes the invention in the '938 patent.

As already pointed out, a neck ring is composed of an upper and lower surface and the juncture point of these two surfaces, called an apex in '938. The purpose of the neck ring is to interact with the cap in such a way as to take advantage of the physical characteristics of poly ethylene or some other resilient elastomer. It was Dr. Mauchly's position that the '938 patent disclosed the best way to utilize the qualities of a resilient elastomer cap.

Dr. Mauchly indicated that the most important aspect of the '938 neck ring was the design of the lower surface:

> "A reverse conical annular surface tapering abruptly on the side of the neck ring remote from the neck opening . . . ."

Two distinct features of the lower surface are covered by the above language: the lower surface is a straight line, and that line forms an abrupt angle with the vertical. The abrupt angle with the vertical is the key to the utilization of qualities of the elastomer cap. As the elastomer is stretched over the apex of the neck ring it is expanded, and a force develops in the cap to have it return to its normal position. The abrupt angle of the lower surface is designed to allow the cap to expend this developed force quickly, in what might be loosely described as similar to the release of a coiled spring.

In order to insure the quality of the seal on the lower surface, the length of the cap skirt must be designed so that the cap bead meets the lower surface in an appropriate position. If a semi-circular lower surface were used, manufacturing discrepancies might cause the cap to seal at a point on the circumference of the lower surface other than the intended point; this, in turn, could affect the sealing potential. The conical surface, on the other hand, minimizes the adverse effect of manufacturing variations, since the surface itself is a straight line, and, therefore, does

not have the inherent variations which a semi-circular surface would have.

The upper surface, which is also conical and abruptly tapered, is not as critical as the lower surface, in Dr. Mauchly's opinion. Expansion of the cap bead is the function of the upper surface, and either a semi-circular design, or some other design, will accomplish this purpose. However, the conical design is important to the extent that it requires a constant amount of force to be applied as the cap is moved down the upper surface, rather than a semi-circular surface which would require less pressure just above the apex than at points closer to the mouth of the bottle.

Design of the juncture of the upper and lower surfaces is not critical in relation to the sealing effect. The ideal design in Dr. Mauchly's opinion is that the juncture point or apex be as sharp as possible, but not so sharp as to damage the cap. If a radial-juncture surface is used, rather than a sharp-juncture point, it becomes possible for the cap to hang up on the radial surface. If the apex is sharp, then the transition from the upper to a lower-conical surface of the neck ring is achieved rapidly, and the amount of continuous force being applied to move the cap down the upper surface combined with the forces in the expanded cap results in springing the cap over the apex into its sealing position. The use of a radial surface, on the other hand, introduces a possible point where the cap might appear to be properly applied, when, in fact, it was not properly seated.

The only remaining aspect of '938 relates to the double seals and their quality. Dr. Mauchly's testimony, amplified in his affidavit, describes two forces at work: a radial and an axial force. As the cap is expanded over the neck ring, a radial force is created—the internal diameter of the cap bead expands and a resultant force develops to have the diameter return to its normal position. When the cap is seated, there is a radial force perpendicu-

lar to the vertical wall of the bottle causing the cap to grip the lower conical surface. Moreover, since the cap is a one-piece construction, as the cap head expands an axial force is created, forcing the top of the cap down onto the bottle mouth, and conversely on the lower surface there is an axial force in an upward direction forcing the head of the cap to contact the lower conical surface.

In sum then, Dr. Mauchly represented the '938 patent as the best possible design of a container and an elastomer cap. Unfortunately, this is not the precise issue of the case. Notwithstanding the engineering refinements of '938, in order for the patent to be valid, the disclosures of '938 must be found to be a non-obvious improvement over prior art. This court is, however, fully mindful of the often-articulated principle that simplicity does not bar patentability, and that care must be exercised to prevent hindsight from improperly coloring the determination of validity. *See* e.g., *Diamond Rubber Co. v. Consolidated Rubber Tire Co.*, 220 U.S. 428, 435 (1911).

In *Graham v. John Deere Co., supra* at 35-36, the Supreme Court indicated that certain pragmatic sub-tests are relevant in resolving the issue of non-obviousness. I have found as a fact that a need for improved closures existed in the pharmaceutical industry in 1948. I have also detailed the licenses granted under '938. The probative value of these licensing agreements is somewhat suspect; however, I do think it is appropriate to conclude that '938 did meet with moderate commercial success. There was no direct evidence on the third sub-test, viz., whether men skilled in the art had endeavored to solve the problem. All in all, the sub-tests favor patentability.

However, I am persuaded that this case falls into the same class as *Formal Fashions, Inc. v. Braiman Bros., Inc.*, 369 F.2d 536 (2nd Cir. 1966). There Judge Medina observed:

> "Appellant further offered the usual secondary evidence that the particular 'invention' before the

> court filled a long felt need . . . and had become a commercial success. But once it had been established by prior art references that the difference between the patent in suit and this prior art is . . . insubstantial . . . such secondary evidence cannot be held to demonstrate lack of obviousness." *Id.* at 539.

As to the use of polyethylene or other elastomer caps, it is clear that this is found in the prior art of Jesnig '327, the Lumelite cap, the Kitchen Kap, Sampson, and in the article entitled "Precocious Plastics."

Goebel and Stewart both show abruptly tapered conical surfaces forming the neck ring. They both have radial-juncture surfaces; however, the elimination of this feature would not render the '938 patentable. In fact, Dr. Mauchly indicated that there was merely a qualitative difference between a neck ring without a radial juncture and one with a radial juncture. Also, Goebel emphasizes the importance of having an abruptly-tapered lower surface for the same reasons as Dr. Mauchly.

The British patent describes a neck ring that is the same as '938. A "V" shaped neck ring as sharp as possible, is equivalent to saying abruptly tapered upper and lower conical surfaces. The Kitchen Kap also has an abrupt lower conical surface, although its upper surface has only a 4° angle. Also, Jesnig '327 was conceded by Dr. Mauchly to disclose the double sealing effect, although he did question the quality of the seal. The Kitchen Kap shows double sealing, with the cap and the mouth of the bottle, and the cap bead and the lower neck ring surface. Likewise, if the Lumelite cap were dimensionally coordinated with the British finish, a double sealing would be effectuated.

In sum, it is my conclusion, that taken as a whole, the '938 patent was obvious to one skilled in art. Therefore, it is my conclusion that the patent in suit, '938, is invalid under the standards of section 103.

INFRINGEMENT

The accused containers have a radial juncture between the upper and lower surfaces of the neck ring of 1/64 to 1/32 of an inch. I have also interpreted '938 to require a sharp-line juncture point of the upper and lower conical surfaces. Therefore, the issue is whether or not this structural difference is sufficient to preclude a finding of infringement.

Defendants' primary defense to infringement is that the accused structures cannot infringe because the doctrine of file-wrapper estoppel precludes this Court from reading the term "apex" to mean anything other than a sharp-line juncture. Under the doctrine of file-wrapper estoppel, a patentee who has limited a claim to circumvent a prior-art rejection by the Examiner is foreclosed from later claiming an interpretation which would effectively reinstate the element, or elements, previously eliminated. *Schriber-Schroth Co. v. Cleveland Trust Co.*, 311 U.S. 211 (1940); *Exhibit Supply Co. v. Ace Corp.*, 315 U.S. 126 (1942); *Chemical Construction Corp. v. Jones & Laughlin Steel Corp.*, 311 F.2d 367 (3rd Cir. 1962). If Mr. Jesnig substituted the term annular apex to avoid a prior-art rejection, then '938 should be read in this light.

I have already detailed in my findings of fact the transactions before the Examiner, and it is clear that on numerous occasions Mr. Jesnig distinguished his application from prior art on the basis that his neck ring had a sharp-line juncture. However, it is equally clear that the actual language of the final claim was not limited to avoid a prior-art rejection. Rather, the final claim and the original claim are the same, and the limited claims were submitted in the interim. Therefore, the doctrine of file-wrapper estoppel is not applicable.

This is not the end of the inquiry. It is now necessary to determine the effect of the doctrine of equivalents. In *Graver Tank & Manu. Co. v. Linde Air Products Co.*,

339 U.S. 605, 608 (1950), the Supreme Court articulated the appropriate standard:

> "[There is infringement] if [the accused structure] performs substantially the same function in substantially the same way to obtain the same result."

The plaintiff contends that under the standard of *Graver* the accused structures infringe. Dr. Mauchly, the plaintiff's expert, concluded that the accused structures had the same structural components and double seal as '938. He did, however, indicate that a radial juncture would affect the functioning of '938, and that this would be a less than ideal design. The defendants' expert emphasized the structural difference of the radial juncture, and the difference of the upper surface of some of the accused structures. Although much conflicting evidence was introduced as to the existence of element M of '938 in the accused structures, it is my opinion that, even if the accused structures had element M, infringement would not necessarily follow. The concern in this case is the design of the neck ring and cap and the resultant sealing effect.

Be all this as it may, in *Graver*, the Supreme Court also indicated that "equivalency must be determined against the context of the patent, the prior art and the particular circumstances of the case." 339 U.S. at 609. A particular application of the above principle that is pertinent here is *Lockwood v. Langendorf United Bakeries, Inc.*, 324 F.2d 82 (9th Cir. 1963). There the court observed:

> "[W]here . . . the art is fairly crowded and the main elements of the patent are found or indicated in prior art, this issue [equivalency] should be determined narrowly rather than liberally. If in fact, not merely colorably, the accused article de-

parts from the teaching of the patent in the means by which it achieves the result there is no infringement." *Id.* at 88.

It is clear that the approach taken by the *Lockwood* court is appropriate in this case. Looking at the '938 patent in light of Dunfee, Goebel, Stewart, the British patent, the Lumelite cap, the Kitchen Kap and the Flexeal finish, and the standard rounded finish, I am persuaded that the doctrine of equivalents is not properly applicable to result in a finding of infringement. The main elements of '938, the abrupt lower conical surface, the upper and lower conical surfaces in combination, and the polyethylene caps are all in the prior art. Also, the prior art disclosed upper and lower conical surfaces with a radial juncture. These were distinguished during the patent prosecution as being insufficient to achieve the invention. Moreover, the plaintiff's own expert indicated that the '938 patent was an improvement on prior art with the radial juncture.

It is true, as the plaintiff argues, that the use of a small radial juncture is a small quantitative difference. Yet, in the overall context of this case, the radial juncture also constitutes a qualitative difference between '938 and the accused structures.

CONCLUSIONS OF LAW

(1) This Court has jurisdiction over the parties and subject matter.

(2) Venue in this judicial district is proper.

(3) Plaintiff Package Devices, Inc. is the owner of United States Letters of Patent No. 2,020,938.

(4) Claim 2 of plaintiff's patent meets the requirements of validity under 35 U.S.C. §§101, 102.

(5) Claim 2 of plaintiff's patent is invalid under 35 U.S.C. §103.

(6) The accused structures do not infringe United States Letters No. 2,602,938.

ORDER

AND NOW, this 28th day of April, 1969, it is ORDERED that in Civil Actions Nos. 30984, 34333, 34334, 34483, judgment is entered in favor of the defendants, Sun Ray Drug Co., Owens-Illinois Glass Co., Wyeth Laboratories Division, American Home Products Corp., and E. J. Korvette, Inc.

/s/JOHN P. FULLAM, J.

JUDGMENT OF THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

Nos. 18,006, 18,007, 18,008, 18,009

ON APPEALS FROM THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF PENNSYLVANIA

Present: BIGGS, McLAUGHLIN and STALEY, *Circuit Judges*

JUDGMENT

These causes came on to be heard on the record from the United States District Court for the Eastern District of Pennsylvania and were argued by counsel.

On consideration whereof, it is now here ordered and adjudged by this Court that the judgment of the said District Court, filed April 28, 1969, be, and the same is hereby affirmed, with costs taxed *in favor of appellees.*

ATTEST:

THOMAS F. QUINN,
Clerk

September 29, 1970